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ABSTRACT

This unit of instruction was designed as a survey course of the plant kingdom, including poisonous, ornamental, and edible plants of South Florida, their structures and functions. The booklet lists the relevant state-adopted texts and states the performance objectives for the unit. It provides an outline of the course content and suggests experiments, demonstrations, field trips, speakers, and topics for student projects, reports, discussions, and additional innovative activities. Also listed are related mathematics problems, and relevant films, transparencies, slides, filmstrips, models, videotapes and records available from the Dade County Audiovisual Center. Other audiovisual materials and resources are recommended, and a master sheet is provided relating each suggested activity to the specific performance objectives. (JR)

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AUTHORIZED COURSES OF STUDY FOR THE QUINMESTER PROGRAM

THE WORLD OF PLANTS

5311.13
5312.13
5313.13

SCIENCE
(Experimental)

DADE COUNTY PUBLIC SCHOOLS

DIVISION OF INSTRUCTION • BULLETIN IQ • JANUARY 1972

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(Experimental)

Written by Louise Parcell
for the
DIVISION OF INSTRUCTION
Dade County Public Schools
Miami, Fla.
1971

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THE WORLD OF PLANTS

COURSE DESCRIPTION:

A survey course of the plant kingdom, including poisonous, ornamental, and edible plants of South Florida, their structures and functions.

ENROLLMENT GUIDELINES:

None

STATE ADOPTED TEXTS:

1. Kilburn, Robert and Thurber, Walter. Exploring Life Science. Atlanta: Allyn & Bacon, Inc., 1966.

2. Frazier, Ralph and Smith, Herbert. The Biological Sciences. Atlanta: Laidlaw Brothers, 1969.

3. Brandwein, Paul, Burnett, R. Will and Stollberg, Robert. Life: Its Forms and Changes. Atlanta: Harcourt, Brace and World, Inc., 1968.

PERFORMANCE OBJECTIVES

The student will:

1. Using a visual aid, illustrate selected parts of a plant cell.

2. State reasons why a heat source such as sunlight is necessary for green plants to make food and predict how green plants get needed energy at night.

3. Given activities to perform, suggest how plants get rid of waste products.

4. Given a group of protist micro-organisms, discover the presence of plant and animal characteristics.

5. Predict what might happen in the food chain if one species of the protist group suddenly died.

6. Describe the problems mankind might encounter if there were no protists on earth.

7. Given one or more simple plants, investigate characteristics which show a transition of plants from a water to a land environment.

8. Given selected vascular plants of various types, point out similarities and differences.

9. Predict the advantages of sexual reproduction in plants.

10. Given selected vascular plants, describe their importance.

11. Recognize the common poisonous, edible and ornamental plants common to South Florida.

12. Given pictures of unusual plants of the world, theorize as to their development and why they are not yet extinct.

13. Given the milestones of botany, suggest an area in which botanists should concentrate future studies.

COURSE OUTLINE

I. The Plant Cell

A. Structure

B. Functions

C. Cellular Metabolism

1. Photosynthesis
2. Respiration
3. Transpiration

II. Plant-like Protists

A. Those containing chlorophyll

1. Euglena
2. Algae

B. Those not containing chlorophyll

1. Bacteria
2. Yeast
3. Mold
4. Smuts, rusts
5. Mushrooms
6. Slime molds
7. Lichens

III. Simple Plants (non-vascular plants)

A. Mosses

B. Liverworts

IV. Complex Plants (vascular plants)

A. Ferns or "spore bearers"

B. Gymnosperms or "uncovered seed plants"

C. Angiosperms of "flowering plants"

1. Root
2. Stems
3. Leaves
4. Flowers
5. Seed development

D. Importance

V. Typical Plants of South Florida

A. Poisonous

1. Internal
2. Skin
3. Respiratory

B. Edible wild plants in South Florida

C. Ornamental plants in South Florida

VI. Unusual Plants of the World

VII. Milestones in Botany

EXPERIMENTS

Kilburn, Robert and Thurber, Walter. Exploring Life Science. Atlanta: Allyn & Bacon, Inc., 1970.

1. Plant Cells (p. 402)
2. Osmosis (p. 407)
3. Osmosis in Onion Cells (p. 407)
4. Effect of Sunlight on Chlorophyll (p. 421)
5. Separating Plant Colors (p. 420)
6. Intake of Carbon Dioxide (p. 424)
7. Behavior of Guard Cells (p. 415)
8. Examination of Pond Scum (p. 153)
9. Testing Euglena's Reaction to Light (p. 170, #2)
10. Products of Fermentation (p. 160)
11. Extracting Enzymes from Yeast (p. 161)
12. Food Preferences of Molds (p. 160)
13. Capillary Action (p. 411)
14. Liquid Rise in Celery (p. 412)
15. Preparing Leaf Sections (p. 414)
16. Parts of a Seed (p. 370)
17. Germinating Dicot and Monocot Seeds (p. 373)
18. Testing for Digestion (p. 373)
19. Regions Governing Growth (p. 388)

Frazier, Ralph and Smith, Herbert. The Biological Sciences. Atlanta: Laidlaw Brothers, 1969.

20. Observing Onion Cells (p. 36)
21. Observing Elodea (p. 39)
22. Effects of Diffusion Using Potassium Permanganate (p. 42)
23. Observing Algae (p. 139)
24. Growing Bacteria (p. 102)
25. Culturing Mold (p. 142)
26. Observing Lichens (p. 148)
27. Observing Bacteria (p. 97)

28. Investigating Rate of Decay by Bacteria (p. 102, #2)
29. Investigating the Structure of the Moss Plant (p. 151)
30. Examining Fronds of Ferns (p. 162)
31. Observing Conifer Cones and Seeds (p. 169)

Brandwein, Paul, Burnett, R. Will and Stollberg, Robert. Life: Its Forms and Changes. Atlanta: Harcourt, Brace & World, Inc., 1968.

32. Anatomy of the Corn Plant (p. 151)
33. Investigating Root Hairs (p. 147)
34. Investigating Soil Composition (p. 145)
35. Adaptations to Drying Out (p. 265)
36. Examining Flower Structures (p. 425)
37. Examining Reproduction in Flowers (p. 293)
38. Investigating the Development of Fruit (p. 295)

DEMONSTRATIONS

Kilburn, Robert, and Thurber, Walter. Exploring Life Science. Atlanta: Allyn & Bacon, Inc., 1970.

1. Making A Model Cell (p. 406)
2. Carbon Dioxide for Photosynthesis (p. 422)
3. By-products of Phytosynthesis (p. 423)
4. Water Losses from Plants (p. 418)
5. Hay Infusion Method in Preparing a Culture (p. 146)
6. Preparing Other Cultures (p. 147)
7. How UV Light Affects Mold & Bacteria (p. 173 #17)
8. Can Yeast Ferment Different Types of Sugars (p. 160)
9. Amount of Water Intake (p. 372)
10. Oxygen Requirement (p. 374)
11. Carbon Dioxide Production (p. 374)
12. Energy from Respiration (p. 375)
13. Response of Seedling to Gravity and Light (p. 391)

Frazier, Ralph and Smith, Herbert. The Biological Sciences. Atlanta: Laidlaw Brothers, 1969.

14. Osmosis (p. 41)
15. Osmosis (p. 44)
16. Culturing Euglenas (p. 124)
17. Building a Terrarium (p. 153)

Brandwein, Paul, Burnett, R. Will and Stollberg, Robert. Life: Its Forms and Changes. Atlanta: Harcourt, Brace & World, Inc., 1968.

18. Preparing a Culture Using Pond Water (p. 311)
19. Investigating Decay Bacteria (p. 143)

Other suggested demonstrations.

20. Separating Plant Pigments--Use water bath. Chop spinach leaves and put into beaker. Add enough alcohol to cover. Heat until alcohol becomes dark. Pour 50 ml of the alcohol into glass cylinder and add to it 10 ml of water. Cool. Add 60 ml of benzol and stir with glass rod, 1-2 minutes. As contents settle two layers appear--one with green pigment and the other contains mixture of red, orange, and yellow pigments. Try again with crotons, coleus, and yellow leaves.
21. Diffusion into Leaf. Use three jars. Suspend a piece of raw purple cabbage via string from the lid of each. Fill the jars 1/3 full - one with ammonia, one with hydrochloric acid, and one with water. Note the change. (cabbage should not be in the liquid)
22. Preparing Yeast. One compressed yeast cake, 1 T. sugar, 1 cup of water. Allow to stand overnight.
23. Demonstrate the liquid rise of eosin in small plant. Make cross sections of stem and leaf to study with the microscope.
24. Use lanolin to locate the stomata on a leaf.
25. Try germinating seeds in different substances, i.e. soil, cotton, sawdust, vermiculite.
26. Demonstrate vegetative propagation by cutting an eye of a potato and plating it in a pot of soil.
27. Grow a plant in the classroom using sawdust or wood shavings and a hydroponic solution.

PROJECTS

1. Sketch cells seen through microscope. Label parts. List the structures which are common to all the cells observed.

2. Make a chart which compares a "typical" plant cell with a "typical" animal cell.

3. Using two plants at home--cover both with a plastic bag, tied so that no air escapes. Set one plant in sunlight. Set the other plant in a dark place. Make and record observations.

4. Make models of micro-organisms using soap, plaster-of-Paris or plastic.

5. Make a chart to illustrate the food chains.

6. Construct and grow a mold garden.

7. Show by drawings how various protists break compounds into simpler elements.

8. Build a terrarium.

9. Make a chart showing the succession of plants in a pond.

10. Prepare a bulletin board display showing climatic regions and their plant types.

11. Illustrate the root systems of various types of plants.

12. Collect and mount different types of flowers.

13. Show by charts, methods of propagation without using seeds.

14. Arrange a display of products, other than foods, which are obtained from plants.

15. Trace man's source of food and prepare display for the bulletin board.

16. Make a display picturing plants in South Florida which are poisonous to man.

17. Collect pictures of plants that are edible but found growing wild in South Florida.

18. Observe a Venus flytrap and/or pitcher plant. Explain how they obtain food if it is not captured.

19. Chart the increase in production of corn per acre in the past 20 years, using 5 year intervals.

20. Build a scale model to illustrate hydroponic farming.

21. Find a tree that was cut down recently. Determine its age and what the climate was through the years of its growth.

REPORTS

1. Hooke's study of cells
2. Products that contain algin --a substance obtained from algae
3. Red tide and the West Coast of Florida
4. The effect of phosphates on the growth rate of algae
5. Diatoms and why they are found in your toothpaste
6. The importance of soil micro-organisms
7. Where do scientists look for new species of mold in making antibiotics?
8. Different bacterial diseases of man--transmission, symptoms, treatment, and prevention
9. Useful bacteria
10. Helpful bacteria in sewage treatment plants
11. Botulism
12. Works of one of these men: Lister, Pasteur, Fleming, George W. Carver, Luther Burbank, or Melvin Calvin
13. Choose one tropical fruit and explain how it helps the economy of South Florida
14. Products from evergreens and flowering plants
15. Importance of lichens in soil formation
16. Micro-organisms, parasites and saprophytes
17. Compare the leaves of gymnosperms and angiosperms
18. Victory Gardens (World War II)
19. Advantage of a covered seed over an uncovered seed
20. Pollinization of a plant with pistilate flowers
21. Redwood Trees and the controversy surrounding them
22. Any unusual plant and how it is adapted to its environment
23. Cross-breeding--How it has helped agriculture
24. Hydroponic farming, advantages and disadvantages

25. Citronella grass and lemon grass

26. The medicinal value of: carolina jessamine, pokeweed, chinaberry, and the castor bean.

ADDITIONAL INNOVATIVE ACTIVITIES

1. Review--How to use a microscope.

2. Observe various cells--lettuce, cork, carrot, potato, spyrogyra, cucumber, and stain to identify parts easily.

3. Observe what happens to cells of salt water algae when fresh water is added to the slide.

4. Use a students' drawings, paste to heavy cardboard and cut out like a puzzle.

5. Construct a crossword puzzle to learn structures and functions of cell parts.

6. Demonstrate diffusion by placing clear odorous liquid in a jar and allow the strong odor to drift throughout the classroom.

7. Test substances for a. starch: iodine + starch---black color change
   b. sugar: benedicts + sugar--yellow color change
   c. protein: biurets + protein--pink color change

8. Check the leaves from your schoolyard for comparison with those used in experiment #4, p. 4.

9. Explain formula for photosynthesis.

10. Draw and label structures of different algae.

11. Draw a picture to show the conjugation method of reproduction.

12. Use two jars. Put a fish and algae in each one. To one jar add some detergent (source of phosphates). Observe the results.

13. Observe mushrooms. Collect some species. Cut off the tops and place them on sheets of paper to collect spores. Observe under the microscope.

14. Make a mold garden.

15. Draw the three types of bacteria.

16. Draw a mold plant. Illustrate the method of reproduction.

17. Construct a crossword puzzle to learn about protists and pertinent information.

18. Experiment to find how temperature affects growth of molds and yeast.

19. Investigate molds preference of foods--jelly, nutrient agar, orange, bread, meat, etc.

20. Have class study a teacher prepared slide of athlete's foot fungus.

21. Collect moss plants. Observe them to see how long it takes to complete one alternation of generations.

22. Draw a typical plant, label the basic parts and state the function of each part.

23. Snip root hairs off one germinating seed to see how it affects the plants' growth.

24. Design an experiment to determine how the growth rate of a seedling is affected by the hormone gibberellin.

25. Experiment to learn if germinating seeds will grow the same in different soils such as clay, sand, loam. Use pH paper for accurate indication of acid and basic soil types.

26. Determine the effect chemicals have on the rate of root growth. Obtain two cuttings from the same or similar plants and soak only one in indoleacetic acid for eight hours. Soak the other cutting in water for eight hours. Plant each one in a pot of soil. Examine each for root growth in one week.

27. Make three drawings of flowers and suggest the agent of pollination when:

    a. stamen are taller than pistil
    b. pistil is taller than stamen
    c. absence of stamen

28. Study leaf arrangement on the stem. Observe leaves and make sketches. Try to explain the arrangement in terms of the plants adaptation to its environment.

29. Observe various threads under a microscope. Tease the end of each thread and add a drop of water. Sketch these kinds of threads: cotton, mercerized, line, and nylon. In what kind of situations can this be used as identification.

30. Give reasons why a student should try to convince his father that he should not cement the whole yard and get rid of all the grass and shrubbery.

31. Have students take inventory and make sketches of poisonous plants in their yards. After their study of poisonous plants, students should take inventory again, adding to the original list all plants recently discovered as being poisonous.

32. Draw an unusual but imaginary plant. Explain its method of reproduction, food getting, energy source, waste disposal, and any other processes which you imagine are needed.

33. Design a procedure which might produce a new inexpensive and nutritious vegetable for the market.

34. Compare the potential power of plants in germ warfare to atomic warfare in destroying another country.

RELATED MATH PROBLEMS

1. Make a tranpiration meter using a ruler and glass tubing connected to a plant stem with rubber tubing. Put water in the glass tube. Mark the position of the water in the tubing at 10 minute intervals.

2. Calculate the number of stomates per leaf. Make a collodion cast of a leaf surface. Lay a piece of window screen on the cast. Count stomates showing through several squares and get an average number per square. Trace the leaf on a sheet of paper. Determine the number of squares on the leaf and then the total number of stomates.

3. Measuring microscopic objects. The size of microscopic organisms is found by comparing them with something whose size is already known, such as a human hair.

4. If one bacterium divides every 20 minutes how many offspring are produced in 12 hours?

5. Test the effect of temperature on fermentation rate. Fill a test tube with yeast-syrup mixture. Stand test tube upside down in ice water and measure time needed to collect half a test tube of gas. Try other temperatures. Make a graph of your results.

6. Make a survey in your class (no names though) of how many students have athlete's foot. Find the percent of students infected. If a member of the class does not have athlete's foot what are his/her chances of getting it?

7. Draw a picture of a root hair and another type of root cell. Compare the surface area of the two and explain which one has the greater ability for absorption.

8. Lay 25 or more radish seeds on a strip of moist cloth or layers of paper toweling. Roll the cloth and put it in a covered jar. Three days later count the number of germinated seeds and calculate the percent of viability. Use bean seeds and find out if the percent of viability is the same.

9. Assume two friends have eaten some wild berries but did not know they were poisonous. One boy had eaten lunch; the other had not. Both boys are about the same size. Both boys ate the same quantity of berries. The boy who had not eaten lunch began to feel ill 1½ hours later. If the rate of absorption is cut by 1/3 on a full stomach--predict how much time will pass before the other boy begins to feel ill.

10. If you cross a hardy, short stemmed corn plant with a weak, tall stemmed corn plant what possible characteristics will the four offspring show? How can you produce more corn plants which are hardy and have tall stems?

11. Find out how many crops of tomatoes a farmer can produce in one year. If that same farmer used hydroponic and artifical lighting techniques, how many more crops a year will he produce? If that farmer receives $5,000 per crop how much more money will he receive using the newer techniques?

12. To grow vegetables hydroponically, the following chemicals must be added to every 1,000 gallons of water:

magnesium sulfate--2 pounds	ammonium sulfate-- 1 pound
potassium nitrate--4 pounds	calcium sulfate --13 pounds
monocalcium phosphate--2 pounds	

As a favor to your science teacher, who only needs one gallon of solution, compute the amounts needed for only one gallon of water.

SPEAKERS

BOTANIST

1. Mrs. Julia Morton
   Biology Department
   University of Miami
   Coral Gables, Florida

   areas: poisonous, edible and ornamental plants; 2-3 weeks notice; must have audience of 50 or more:
   telephone: 284-3741

NATURALIST

2. Mr. Harry Ryttenberg
   Museum of Science
   3280 S. Miami Avenue
   Miami, Florida

   areas: toxic, edible, survival plants of South Florida
   telephone: 854-4242

PATHOLOGIST

3. Mr. Daigle or Mr. Campbell
   Dade County Agricultural Agents Office
   2690 N. W. 7th Avenue
   Miami, Florida

   areas: 30 minute program on poisonous, ornamental plants, importance, agencies service to community; audience to be 100 or more; will make 1-2 presentations a week throughout the county:
   telephone: 635-1387

FIELD TRIPS

1.	Redland Fruit and Spice Park (247-5727) Redland Road and S. W. 248 St. Homestead, Florida	Contact Mrs. Patti Amon at 854-3530, extension 233 for guided tours, 4 weeks prior to desired dates. no admission charge
2.	Matheson Hammock (666-6979) Old Cutler Road Coral Gables, Florida	same as above
3.	Camp Owaissa Bauer (247-6016) 17001 S. W. 264 Street Homestead, Florida	same as above
4.	Greynolds Park (947-3349) Ojus, Florida	same as above
5.	Fairchild Tropical Garden 11935 Old Cutler Road (Sci. Bldg) Coral Gables, Florida	Contact Mrs. Felton at 665-6780; Tram ride @ 25¢ per student for school groups of 20 or more. Tram holds 45-50 students; rides begin at 10:00 a.m.; several classes can be accommodated by rotating groups of students through Matheson Hammock and the Garden.
6.	Everglades National Park P. O. Box 279 Homestead, Florida 33030	Contact Dale Smith at 247-6211, extension 49; 1 guided walk per day on Gumbo Limbo Trail; make reservations 2-3 weeks prior to desired date; no admission charge for school groups.
7.	Brickell Hammock Museum of Science 3280 S. Miami Avenue Miami, Florida	Contact Mr. Harry Ryttenberg or Charles Worthington at 854-4242 3 weeks prior to desired date; no charge; not more than 10-15 students per guide.
8.	Hialeah Race Course--Grounds Hialeah, Florida	Contact Mr. Smith at 887-4347, 2 weeks prior to desired date. Available from Sept. to January 1 only; no admission charge; groups of 15; well behaved; each group must be accompanied by an adult.

SUGGESTED DISCUSSION QUESTIONS

1. Why is it important to study plants?
2. How is a plant cell different from an animal cell?
3. How do cells get rid of wastes?
4. If plants need sunlight to make food for energy, where do they get energy at night or on a cloudy day?
5. How are protists alike yet different?
6. How do phosphates affect the growth rate of algae? Fish?
7. Why are protists not considered plants or animals?
8. Are protists the most primitive organisms living today on earth?
9. If you don't live near the ocean should its being polluted alarm you? Why?
10. How might plants appear and grow on an island newly formed by volcanic action? What kind of plants would you probably find?
11. What happens in the food chain when DDT is absorbed by one species of protists?
12. Why do some bacteria become resistant to certain antibiotics?
13. What climatic conditions could occur for the moss plant to become extinct? How would its disappearance affect life on earth?
14. Why did primitive vascular plants become extinct?
15. Why are the seed bearing plants the most dominant form of plants today?
16. How can seedless orange trees be produced?
17. What are the advantages of grafted trees?
18. What are the advantages of sexual reproduction in plants?
19. Are we dependent upon plants? Why?
20. What happens when man's progress destroys most plants?
21. If some plants are poisonous, why not destroy all the poisonous plants?
22. "Do I have someone in the class who would like to sample this berry and describe its taste to the other members in the class?" (Don't let students taste poison berries)

FILMS AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

1. Everyman's Empire
   AV#1-13005, 18' C
2. Grain that Built a Hemisphere
   AV#1-03726, 10' C
3. Osmosis
   AV#1-11094, 14' C
4. Asexual Reproduction
   AV#102214, 10' BW
5. Gift of Green
   AV#1-11090, 20' C
6. Photosynthesis: Chemistry of Food Making
   AV#1-13779, 13' C
7. World of Little Things
   AV#1-11146, 15' C
8. Japan Harvests the Sea
   AV#1-30936, 29' C
9. Algae
   AV#1-11117, 16' C
10. Simple Plants: Algae & Fungi
    AV#1-11115, 14' C
11. Simple Plants: Bacteria
    AV#1-11120, 14' C
12. Why Foods Spoil
    AV#1-11549, 14' C
13. Swimming Pool Bacteria
    AV#1-14134, use only with South Florida Environmental Science Media Unit "South Florida Flora Detrimental to People"- AV#3-60040
14. Lichens and Mosses
    AV#1-11113, 22' C
15. This Vital Earth
    AV#1-02178, 10' C
16. Life in the Forest
    AV#1-03755, 11' C
17. Adaptation in Plants
    AV#1-11107
18. Parade of Life
    AV#1-02220, 11' C
19. Glory of Spring
    AV#1-02334, 10' C
20. Roots of Plants
    AV#1-02320, 11' C
21. Leaves
    AV#1-02262, 10' BW
22. Secrets of the Plant World
    AV#1-11096, 13' C
23. Flying Seeds
    AV#1-02333, 10' BW
24. Growth of Seeds
    AV#1-11103, 14' C
25. Flowering Desert
    AV#1-02347, 11' C

26. Growth of Flowers
AV#1-02354, 11' C
27. Reproduction in Plants
AV#1-11051, 14' C
28. Fruits of Plants
AV#1-11106, 12' C
29. Coniferous Trees of the Pacific Northwest
AV#1-11497, 16' C
30. From Trees to Paper
AV#1-11607, 13' BW
31. Nature's Cures
AV#1-14140, use only with South Florida Environmental Science Media Unit "South Florida Areas of Biological Interest" AV#3-60042
32. The Love Vine
AV#1-14122, use only with South Florida Environmental Science Media Unit "South Florida Flora Detrimental to Agriculture" AV#3-60038
33. Redwood Trees
AV#1-11498, 15' C
34. Plant Traps
AV#1-02327, 10' C
35. Carnivorous Plants
AV#1-02327, 11' C
36. The Everglades: Conserving a Balanced Community
AV#1-13868, 13' C

FILMS AVAILABLE FROM OTHER SOURCES

Modern Talking Pictures
714 Spring St. N. W.
Atlanta, Georgia 30308
37. The Fabulous Busch #2911, 13' C

Shell Oil Company
450 N. Meridian St.
Indianapolis, Indiana 46204
38. Food or Famine? 28½' C

Sterling Movies
43 W. 61 St.
New York, New York 10023
39. Life of the Molds, 21' C

Association-Sterling Films
5797 New Peachtree Road
Atlanta, Georgia 30349
40. And On the Third Day, #F-601, 28' C

TRANSPARENCIES AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

1. Phylum Thallophyta (Types of Algae) AV#2,-00074
2. The Fungus Plants, AV#2-00025
3. Phylum Thallophyta (Fungi), AV#2-00075
4. Phylum Bryophyta (Moss, Lichens), AV#2-00076
5. Phylum Pteridophyta (Fern, Moss), AV#2-00077
6. Gymnosperm, AV#2-00078
7. Plant Structure, AV#2-00022
8. Monocot Stem Structure, AV#2-00006
9. Herbaceous Dicot Stem, AV#2-00168
10. Angiosperm; Root, AV#2-00081
11. Angiosperm: Stem, AV#2-00080
12. Angiosperm: Leaf, Plant Factory, AV#2-00079
13. Structure of the Leaf, AV#2-00004
14. Structure of the Leaf, AV#2-00170
15. Phylum Spermatophyta (Dicot, Monocot Seeds), AV#2-00084
16. Flower, AV#2-00088
17. Angiosperm: Flower, AV#2-00082
18. Structure of the Flower, AV#2-00001

SLIDES OR FILM STRIPS AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

1. Trees, AV#5-20078, 29 color slides
2. Plants and Trees, AV#5-20046, 32 color slides
3. Trees and Flowering Plants, AV#5-20001, 30 color slides
4. Flowers, Set #1, AV#5-20080, 30 color slides
5. Flowers, Set #2, AV#5-20077, 34 color slides
6. Structure of the Flower, AV#5-30026, 1 color slide & chart
7. Subtropical Flowering Plants, Part #1, AV#5-20074, 26 color slides
8. Subtropical Flowering Plants, Part #2, AV#5-20067, 26 color slides

South Florida Environmental Science Media Units*

9. South Florida Flora Detrimental to People, Media Unit, AV#3-60040, FS (Local Poisonous Plants)
10. South Florida: South Florida Hammocks Media Unit, AV#3-60043, FS (Deep in Owaissa Bauer)
11. South Florida: South Florida Hammocks Media Unit, AV#3-60043, FS (Inside Matheson Hammock)
12. South Florida Flora Detrimental to People Media Unit, AV#3-60040, FS (Allergy Producers)
13. South Florida Areas of Biological Interest Media Unit, AV#3-60042, FS (Hung-Up on a Hammock, Parts 1 & 2)
14. South Florida Flora Beneficial Flora Media Unit, AV#3-60041, FS (Fruit and Spice Park, Parts 1 & 2)
15. South Florida Flora Detrimental to Agriculture Media Unit, AV#3-60038, FS (Aquatic Weeds)
16. South Florida Fresh Water Biology Media Unit, AV#3-60035, FS (Safety in Size)

* These units contain film strips, slides, tapes, teacher's guide, pages to be duplicated for students, pre and post tests, and follow up activities. Allow seven working days from time of request to the time when the unit is to be used.

SLIDES NOT AVAILABLE FROM DADE COUNTY

Wyeth Laboratories
P. O. Box 8299
Philadelphia, Pennsylvania 19101

17. The First Antibiotic, 35mm slides & tape recording, 12' C

DADE COUNTY MODELS, VIDEOTAPES AND RECORDS

1. Dicot-Leaf Section, AV#6-00180
2. Flowers, AV#6-00030
3. Dicot Flowers, AV#6-00179
4. Poison Plants, Set #1, AV#6-00105
5. Poison Plants, Set #2, AV#6-00106
6. Poison Plants, Set #3, AV#6-00170
7. Air Borne Bacteria, AV#7-10386
8. Local Fungi, AV#7-10387
9. Destructive Fungi at Home, AV#7-10385
10. 4 Common Dangerous Ornamentals, AV#7-10388
11. George W. Carver, AV#3-00124 (tape recording)
12. The Sunlight Years Series: Dr. Henry Perrine, AV#3-00105 (tape)
13. George W. Carver, AV#4-30226 (record)

RESOURCES

Dade County Agriculture Station (telephone 635-1387)
2690 N. W. 7th Avenue
Miami, Florida

1. Poisonous Plants Around the Home -- Bulletin 175B
2. Hydroponic Cultivation of Vegetable Crops -- circular 192-A
3. Know Your Fertilizers and Lime -- Bulletin 177B

University of Miami Bookstore
University of Miami
Coral Gables, Florida

4. Morton, Julia. Plants Poisonous to People in Florida. Miami: Hurricane House Publishers, 1971. ($5.95)
5. Morton, Julia. Wild Plants for Survival in South Florida. Miami: Hurricane House Publishers, 1968. ($3.95)
6. Morton, Julia. "Chart I - Causes of Internal Poisoning." Miami: Hurricane House Publishers, 1971 ($2.50)
7. Morton, Julia. "Chart II - Causes of Skin and Respiratory Irritation." Miami: Hurricane House Publishers, 1971. ($2.50)

8. Life Reprint #76 - "Water Pollution".

MASTER SHEET - THE WORLD OF PLANTS

Objective #	Texts	Experiments	Speakers	Projects	Reports	Field Trips	Demonstrations	Films	Transparencies	Discussion Questions	Slides & Filmstrips	Additional Activities	Math Problems	Models V-Tapes	Resources
1	#1 pp. 401-409, 420,154, 448 #2 pp. 34-46 #3 pp. 70-74	1,20, 21,2, 3		1,2	1		1,14, 15	37,1, 2,3,4		1,2,3		1,2, 3,4, 5,6			
2	#1 pp. 421-426, 414-417, 406-407 #2 pp. 46-47, 192-193 #3 pp. 202-216	4,5,6					21,2, 20	5,6		4		7,8,9			
3	#1 pp. 418-419 #2 pp. 194-195 #3 pp. 202-216	7		3			3,4						1,2		
4	#1 pp. 145-157 #2 pp. 122-124, 135-140 #3 pp. 219-233	8,23, 9		4	2,3, 4,5		18,5, 6,16	7,8,9	1	5,6,7, 8,9		10, 11, 12	3		8
5	#1 pp. 158-169, 20,23-24 36 #2 pp. 91-107, 131, 140-148 #3 pp. 234-248	24,25, 26,27, 10,11, 28,12		5,6,7	6,7, 8,9, 10,11, 12		22,7, 8	10,11, 12,13, 39	2,3	10,11, 12	17,1	13,14 15,16 17,18	4,5,6	7,8,9	
6	#1 pp. 25-29				15,16		19	14				19,20			
7	#1 pp. 286-287 #2 pp. 149-151 #3 pp. 249-253	29		8,9			17	15	4,5	13		21			
8	#1 pp. 284-285, 410-417, 427,449 #2 pp. 154-168 174-184 #3 pp. 254-284, 287-288, 303-305	35, 30,31, 32,33, 34,13, 14,15		10,11			23,24	16,17, 19,20, 21,18	6,7, 8,9, 10,11, 12,13, 14	14,15	3,2,4	22,23, 26	7	1	
9	#1 pp. 370-378, 388-395, 450-453 #2 pp. 184-191 #3 pp. 280-281, 291-298, 425, 196-198	16,17, 18,19, 36,37		12,13	18,17, 19,20		9,10, 11,12, 25,13	22,23, 24,25, 26,27	15,16, 17	16,17, 18	5,6, 7,8, 9	24,25, 28	8	2,3	

MASTER SHEET - THE WORLD OF PLANTS - continued

Objective #	Texts	Experiments	Speakers	Projects	Reports	Field Trips	Demonstrations	Films	Transparencies	Discussion Questions	Slides & Filmstrips	Additional Activities	Math Problems	Models V-Tapes	Resources
10	#1 pp. 380-387 #2 pp. 169-171, 176 #3 pp. 298-302	38		14, 15,21	14		26	28,29, 30		19,2, 20		29,30		4,5,6	
11			1,3	16,17	13,26	7,6,3		31,32		21,22, 23	10,11, 12,13, 14	31	9	10	1,4, 5,6, 7
12			2	18	25, 21,22	4,1, 8		33,34, 35,36		24	15,16	32			
13				19,20	23,24	5,2	27	38,40		25,26		33,34	11,12 13	11,12 13	3,2